AMENDMENTS TO THE SPECIFICATION

Please amend the specification as follows:

Please amend the paragraph beginning on Page 34, line 14 as follows:

In FIG.12, a serial/parallel conversion section 1102 generates parallel signal 1103 from a channel C transmit digital signal 1101 ~~parallel signal 1103~~ in accordance with frame configuration signal 222.

Please amend the paragraph beginning on Page 35, line 22 as follows:

Channel C serial/parallel conversion section 1102 receives a channel C transmit digital signal 1101 and channel C frame configuration signal 222 as input and generates channel C parallel signal 1103 in which information symbols, control symbols, and estimation symbols are present, in accordance with the channel C frame configuration in FIG.10 [[,]] ~~based on channel B transmit digital signal 1101 and frame configuration signal 222~~.

Please amend the paragraphs beginning on Page 40, line 1, line 12 and line 15 respectively as follows:

Synchronization section 1230 detects FIG.9 estimation symbols 103 in received quadrature baseband signal 1204 and received quadrature baseband signal 1214, and the receiving apparatus establishes time synchronization with the transmitting apparatus.

Synchronization section 1244 acquires time synchronization ~~from~~ received quadrature baseband signal 1235 based upon FIG. 10 ~~(FIG.10)~~ estimation symbols.

Channel distortion estimation section 1238 estimates channel distortion ~~from~~ of parallel signal 1237 ~~(FIG.10)~~ based on FIG. 10 estimation symbols.

Please amend the paragraph beginning on Page 44, line 25 as follows:

Information generation section 604 generates transmit digital signal 605 from ~~transmit digital~~ data signal 601, radio wave propagation environment estimation information 1401 and 1402, and request information 603, and outputs this transmit digital signal 605 to modulated signal generation section 606.

Please insert the following paragraph after Page 40, line 14:

Frequency offset estimation section 1242 estimates frequency offset of parallel signals 1237 based on FIG.10 estimation symbols.

Please insert the following paragraphs after Page 45, line 1 as follows:

It is assumed that the locations of the base station and terminals are as shown in FIG. 5. At this time, the reception status of terminal A 402 and terminal B 403 located far from base station 401 is poor, while the reception status of terminal C 404 and terminal D 405 is good as they are near base station 401. Considering this, for example, as shown in FIG. 9, assignment is performed for communication terminals with regard to time-unit or frequency-unit. For example, time 3 through time 6 are assigned for communication with terminal C and time 7 through time 10 are assigned for communication with terminal D. Alternatively, carrier 1 through carrier 3 are assigned for communication with terminal C and carrier 4 through carrier 6 are assigned for communication with terminal D. At this time, communication is performed on channel A and channel B, so that the transmission speed is high.

Then, assignment is performed for terminal A 402 and terminal B 403 for both of which the reception status is poor, with regard to time-unit or frequency-unit, as shown in FIG. 10. For example, time 3 through time 6 are assigned for communication with terminal A, and time 7 through time 10 are assigned for communication with terminal B. Alternatively, carrier 1 through carrier 3 are assigned for communication with terminal A and carrier 4 through carrier 6 are assigned for communication with terminal B. At this time, communication is performed on channel C, so that the transmission speed is low but received data quality is good.

Also, as shown in FIG. 11, the multiplexed signal of channel A and channel B in FIG. 9 is transmitted at frequency f1, and the multiplexed signal of channel C in FIG. 10 is transmitted at frequency f2.

Please amend the paragraph beginning on Page 45, line 18 as follows:

Radio wave propagation environment estimation section 1303 estimates the field strength, multipath environment, Doppler frequency, direction of arrival, channel fluctuation, interference intensity, polarized wave state, and delay profile of a signal received by antenna 1232 <u>about</u> parallel signal 1237 <u>based on</u> FIG.10 estimation symbols.

Please amend the paragraphs beginning on Page 46, line 13 and line 23 respectively as follows:

Information generation section 604 generates transmit digital signal 605 from data 601, radio wave propagation environment <u>estimation</u> information 1401 and 1402, and request information 603 that a user or communication terminal considers necessary, such as transmission speed, modulation method, and received data quality, for example. By this means, a terminal

transmits a signal containing the radio wave propagation environment when the terminal receives a modulated signal transmitted from the base station, and request information requested by the user or terminal.

Also, information generation section 604 has data 601, radio wave propagation environment information 602, and request information 603 that a user or communication terminal considers necessary, such as transmission speed, modulation method, and received data quality, as input, and determines and requests a communication method from radio wave propagation environment estimation information 1401 and 1402 and request information 603. At this time, information on the requested communication method is included in transmit digital signal 605. Here, "communication method" is information as to whether communication is performed by means of a multiplex signal and frequency f1 or whether communication is performed by means of a non-multiplexed signal and frequency f2.

Please amend the paragraph beginning on Page 54, line 25 as follows:

The receiving apparatus is able to establish time synchronization with the transmitting apparatus by having synchronization section 334 detect FIG.16 estimation symbols 103 in received quadrature baseband signal 304 and received quadrature baseband signal 314.

Please amend the paragraph beginning on Page 55, line 1 as follows:

Frequency offset estimation section 332 can estimate the frequency offset from FIG.[[2]] 16 estimation symbols 103 in parallel signal 306 and 316.

After page 58, line 12, please insert the following paragraphs:

It is assumed that the locations of the base station and terminals are as shown in FIG. 5. At this time, the reception status of terminal A 402 and terminal B 403 located far from base station 401 is poor, while the reception status of terminal C 404 and terminal D 405 is good as they are near base station 401. Considering this, it is assumed that assignment is performed to communication terminals as shown in FIG. 16 in time-unit or frequency-unit, for example. For example, in channel A and channel B, time 3 through time 6 are assigned for communication with terminal C and time 7 through time 10 are assigned for communication with terminal D. Alternatively, in channel A and channel B, carrier 1 through carrier 3 are assigned for communication with terminal C and carrier 4 through carrier 6 are assigned for communication with terminal D. At this time, communication is performed on channel A and channel B, so that the transmission speed is high.

Then, assignment is performed to terminal A 402 and terminal B 403, for which the reception status is poor, as shown in FIG. 16 in time-unit or frequency-unit. For example, in channel A, time 11 through time 14 are assigned for communication with terminal A and time 15 through time 18 are assigned for communication with terminal B. Alternatively, in channel A, carrier 1 through carrier 3 are assigned for communication with terminal A and carrier 4 through carrier 6 are assigned for communication with terminal B. At this time, communication is performed on only channel A, so that the transmission speed is low but received data quality is good.

At this time, by transmitting information concerning channel assignment by means of control symbols 104 in FIG. 16, and having a terminal demodulate control symbols 104, it is possible to ascertain where in a frame information for that terminal is assigned.

Next, the receiving apparatus and the transmitting apparatus of the terminal are explained in detail.

FIG. 18 shows one example of the configuration of the receiving apparatus of the terminal. A radio wave propagation environment estimation section 1701 receives parallel signals 306 and 316 as input, estimates the field strength, multipath environment, Doppler frequency, direction of arrival, channel fluctuation, interference intensity, polarized wave state, and delay profile of received signals received by antenna 301 and of received signals received by antenna 311 by means of estimation symbols 103 in FIG. 16, and outputs this information as radio wave propagation environment information 1702.

Please amend the paragraph beginning on Page 62, line 19 and line 26 respectively, as follows:

In this case, pilot symbols 1801 are inserted in a regular manner in a channel ~~A signal by being placed at predetermined positions in a frame~~. A receiving apparatus separates a channel A signal and a channel B signal by means of these pilot symbols 1801, and can then demodulate channel A information symbols 102 by estimating channel A frequency offset and channel distortion.

At this time, pilot symbols are not inserted in a channel B ~~signal~~. Performing coding on channel A or making a channel A signal a pilot at this time makes it possible for the receiving apparatus to demodulate channel B information symbols 102.

After page 64, line 8, please insert the following paragraphs:

Explanations are given of the case in which channel A and channel B are differentially encoded.

FIG. 19 is one example of the frame configuration of the base station transmit signal according to this embodiment. In this case, pilot symbols 1801 are inserted in a regular manner in a channel A signal. In this case, both estimation symbols 103 and pilot symbols 1801 are, for example, known symbols (known pilots). However, their roles differ in the receiver. Estimation symbols 103 are used to perform signal processing that separates multiplexed signals in channel A and channel B. On the other hand, channel B pilot symbols 1801 are signals to be references for demodulating channel A signals after separation, and are symbols for, for example, estimating phase, amplitude, channel distortion, and frequency offset in the I-Q plane.

Then, for example, with symbols of the same carrier and the same time of channel A and channel B, it is assumed that the symbol of channel B is differentially encoded in accordance with the symbol of channel A.

It is assumed that, in channel A, two bits transmitted by one information symbol are shown as FIG. 23A and 23B.

Then, for example, with symbols of the same carrier and the same time of channel A and channel B, it is assumed that the symbol of channel B is differentially encoded in accordance with the symbol of channel A.

Please amend the paragraph beginning on Page 65, line 18 as follows:

Next, an example of the <u>differential</u> coding operation with BPSK modulation will be described. FIGS.23A through 23D are drawings showing examples of the signal point arrangement in the I-Q plane when a channel B signal undergoes differential encoding with respect to a channel A signal. In FIGS.23A through 23D, channel A and channel B signals are subjected to BPSK modulation.

After page 81, line 3, please insert the following paragraphs:

FIG. 19 is an example of the base station transmit signal frame configuration according to this embodiment. In this case, pilot symbols 1801 are inserted in a channel A. At this time, both estimation symbols 103 and pilot symbols 1801 are, for example, known symbols (known pilots).

However, their roles differ in the receiver. Estimation symbols 103 are used to perform signal processing that separates multiplexed signals in channel A and channel B.

Estimation symbols 103 are used to perform signal processing that separates multiplexed signals in channel A and channel B. On the other hand, channel B pilot symbols 1801 are signals to be references for demodulating channel A signals after separation, and are symbols for, for example, estimating phase, amplitude, channel distortion, and frequency offset in the I-Q plane.

Next, the relationship between the channel A and the channel B is explained.

For example, FIG. 24 shows one example of the relationship when channel A undergoes the BPSK modulation and channel B undergoes the QPSK modulation.

It is assumed that, in the channel A, one bit to be transmitted by one information symbol is shown as FIG. 24A and 24B.

Then, the channel B is encoded in accordance with the channel A signal. For example, explanations are given of the relationship between the channel A carrier 1 time 4 and the channel B carrier 1 time 4 in the frame configuration in FIG. 24.

The signal point when information '0' is transmitted in channel A carrier 1 time 4 is positioned as shown in FIG. 24A. At this time, differential encoding is performed for channel B carrier 1 time 4 with respect to channel A carrier 1 time 4, and therefore when information '00', '01', '11', and '10' is transmitted, the signal points are positioned as shown in FIG. 24B.

Similarly, the signal point when information '1' is transmitted in channel A carrier 1 time 4 is positioned as shown in FIG. 24C. At this time, differential encoding is performed for channel B carrier 1 time 4 with respect to channel A carrier 1 time 4, and therefore when information '00', '01', '11', and '10' is transmitted, the signal points are positioned as shown in FIG. 24D.

In this way, channel B is encoded in accordance with the signal point of channel A. Then, for example, with symbols of the same carrier and the same time of channel A and channel B, it is assumed that the symbol of channel B is encoded in accordance with the symbol of channel A.

As shown in FIG. 24, when channel B is encoded in accordance with channel A, channel A can be used as a pilot symbol for channel B. That is to say, when the channel B signal in the receiver is demodulated, it is possible to estimate frequency offset, channel distortion, and phase in the I-Q plane by using the channel A signal. Therefore, the channel A signal can be used as a pilot symbol for channel B signal.

Then, FIG. 25 shows one example of the relationship when channel A undergoes BPSK modulation and channel B undergoes 16QAM.

One bit to be transmitted by one information symbol in the channel A is represented by FIG. 25A and 24C.

Then, the channel B is encoded in accordance with the channel A signal. For example, explanations are given of the relationship between the channel A carrier 1 time 4 and the channel B carrier 1 time 4 in the frame configuration in FIG. 19.

The signal point when information '0' is transmitted in channel A carrier 1 time 4 is positioned as shown in FIG. 25A. At this time, encoding is performed for channel B carrier 1 time 4 with respect to channel A carrier 1 time 4, and therefore, four bits of information are positioned as shown in FIG. 25B.

Similarly, the signal point when information '1' is transmitted in channel A carrier 1 time 4 is positioned as shown in FIG. 25C. At this time, encoding is performed for channel B carrier 1 time 4 with respect to channel A carrier 1 time 4, and therefore four bits of information are positioned as shown in FIG. 25D.

In this way, channel B is encoded in accordance with the signal point of channel A. Then, for example, with symbols of the same carrier and the same time of channel A and channel B, it is assumed that the symbol of channel B is encoded in accordance with the symbol of channel A.

As shown in FIG. 25, when channel B is encoded in accordance with channel A, channel A can be used as a pilot symbol for channel B. That is to say, when the channel B signal in the receiver is demodulated, it is possible to estimate frequency offset, channel distortion, and phase in the I-Q plane by using the channel A signal. Therefore, the channel A signal can be used as a pilot symbol for channel B signal.

Then, FIG. 26 shows one example of the relationship when channel A undergoes QPSK modulation and channel B undergoes 16QAM.

In channel A, two bits transmitted by one information symbol are shown as 2501 in FIG. 26.

Then, the channel B is encoded in accordance with the channel A signal. For example, explanations are given of the relationship between the channel A carrier 1 time 4 and the channel B carrier 1 time 4 in the frame configuration in FIG. 19.

The signal point when information '00' is transmitted in channel A carrier 1 time 4 is positioned at 2501 in FIG. 26A. At this time, encoding is performed for channel B carrier 1 time 4 with respect to channel A carrier 1 time 4, and therefore four bits of information are positioned as shown in FIG. 26A.

Similarly, the signal point when information '01' is transmitted in channel A carrier 1 time 4 is positioned at 2501 as shown in FIG. 26B. At this time, encoding is performed for channel B carrier 1 time 4 with respect to channel A carrier 1 time 4, and therefore four bits of information are arranged as shown in FIG. 26B.

Similarly, the signal point when information '11' is transmitted in channel A carrier 1 time 4 is positioned at 2501 as shown in FIG. 26C. At this time, encoding is performed for channel B carrier 1 time 4 with respect to channel A carrier 1 time 4, and therefore four bits of information are arranged as shown in FIG. 26C.

Similarly, the signal point when information '10' is transmitted in channel A carrier 1 time 4 is positioned at 2501 as shown in FIG. 26D. At this time, encoding is performed for channel B carrier 1 time 4 with respect to channel A carrier 1 time 4, and therefore four bits of information are arranged as shown in FIG. 26D.

In this way, channel B is encoded in accordance with the signal point of channel A. Then, for example, with symbols of the same carrier and the same time of channel A and channel B, it is assumed that the symbol of channel B is encoded in accordance with the symbol of channel A

As shown in FIG. 26, when channel B is encoded in accordance with channel A, channel A can be used as a pilot symbol for channel B. That is to say, when the channel B signal in the receiver is demodulated, it is possible to estimate frequency offset, channel distortion, and phase in the I-Q plane by using the channel A signal. Therefore, the channel A signal can be used as a pilot symbol for channel B signal.

Next, the transmitting apparatus is explained.

FIG. 20 is one example of the configuration of the transmitting apparatus that performs encoding as in FIG. 24, FIG. 25, or FIG. 26 in the frame configuration in FIG. 19.

Referring toFIG. 20, explanations are given of parts that are different from the operation of FIG. 3, namely, channel B.

In channel B, encoding is performed. A coding section 1901 receives channel A transmit digital signal 201 and channel B transmit digital signal 211 as input, performs coding, like FIG. 24, FIG. 25, and FIG. 26, and outputs a post-coding transmit digital signal 1902.

Next, the configuration of the receiving apparatus is explained.

FIG. 21 is one example of the configuration of the receiving apparatus that receives the decoded transmit signal as in FIG. 24, FIG. 25, or FIG. 26 in the frame configuration in FIG. 19.

Referring to FIG. 21, explanations are given of parts that are different from the operation of FIG. 4.

Channel A demodulation section 2003 receives separated channel A parallel signal 2001 as input, demodulates channel A information symbol 102 in FIG. 19, and outputs channel A received digital signal 2004. FIG. 31 shows the detailed configuration of channel A demodulation section 2003 at this time.

In FIG. 31, channel distortion estimation section 3002 receives channel A parallel signal 3001 corresponding to separated channel A parallel signal 2001 in FIG. 21 as input, extracts, for example, pilot symbols 1801 inserted in channel A in FIG. 19, estimates channel distortion, and outputs channel distortion estimation signal 3003.

Similarly, frequency offset estimation section 3004 receives channel A parallel signal 3001 as input, extracts, for example, pilot symbols 1801 inserted in channel A in FIG. 19, estimates frequency offset, and outputs frequency offset estimation signal 3005.

Then, information symbol demodulation section 3006 receives channel A parallel signal 3001, channel distortion estimation signal 3003, and frequency offset estimation signal 3005 as input, eliminates frequency offset, channel distortion, and suchlike distortion from, performs demodulation, and outputs channel A received digital signal 3007.

Channel B demodulation section 2005 receives separated channel A parallel signal 2001 and separated channel B parallel signal 2002 as input, demodulates channel B information symbols 102 in FIG. 19, and outputs channel B received digital signal 2006. A drawing showing the detailed configuration of channel B demodulation section 2005 at this time is FIG. 36.

After page 82, line 18, please insert the following paragraphs:

Thus, a channel B signal is encoded by a channel A signal and pilot symbols are not inserted in channel B, so that transmission speed is improved compared with a system in which pilot symbols are inserted in channel B.

After page 84, line 7, please insert the following paragraphs:

FIG. 27 is an example of the base station transmit signal frame configuration according to this embodiment. In this case, pilot symbols 1801 are inserted in both channel A and channel B. In the case, both estimation symbols 103 and pilot symbols 1801 are, for example, known reference symbols (known pilots). However, their roles differ in the receiver. Estimation symbols 103 are used to perform signal processing that separates channel A and channel B multiplexed signals.

Then, when channel A information symbols are demodulated, channel A pilot symbols 1801 and channel B pilot symbols 1801 are used to estimate channel distortion, frequency offset, and phase and amplitude in the I-Q plane.

Similarly, when channel B information symbols are demodulated, channel A pilot symbols 1801 and channel B pilot symbols 1801 are used to estimate channel distortion, frequency offset, and phase and amplitude in the I-Q plane.

Next, the transmitting apparatus is explained.

FIG. 3 shows one example of the configuration of the transmitting apparatus that transmits the signal of the frame configuration in FIG. 27.

Next, the configuration of the receiving apparatus is explained.

FIG. 35 is an example of the configuration of a receiving apparatus that receives the signal of the frame configuration in FIG. 27.

In FIG. 35, the example of the channel A and channel B demodulation sections is as shown in FIG. 33.

Here, channel A demodulation section 2903 will be described as an example.

Channel distortion estimation section 3202 receives channel A parallel signal 3201 corresponding to separated channel A parallel signal 2901 in FIG. 35 and channel B parallel signal 3208 corresponding to separated channel B parallel signal 2902 in FIG. 35 as input, extracts pilot symbols 1801 inserted in channel A and pilot symbols 1801 inserted in channel B in FIG. 27, estimates channel distortion, and outputs channel distortion estimation signal 3203.

Similarly, frequency offset estimation section 3204 receives channel A parallel signal 3201 corresponding to separated channel A parallel signal 2901 in FIG. 35 and channel B parallel signal 3208 corresponding to separated channel B parallel signal 2902 in FIG. 35 as input, extracts pilot symbols 1801 inserted in channel A and pilot symbols 1801 inserted in channel B in FIG. 27, estimates frequency offset, and outputs frequency offset estimation signal 3206.

Then, information symbol demodulation section 3206 receives channel A parallel signal 3201, channel distortion estimation signal 3203, and frequency offset estimation signal 3206 as input, eliminates frequency offset, channel distortion, and suchlike distortion, performs demodulation, and outputs channel A received digital signal 3007.

Channel distortion estimation section 3202 receives channel B parallel signal 3201 corresponding to separated channel B parallel signal 2902 in FIG. 35 and channel A parallel signal 3208 corresponding to separated channel A parallel signal 2901 in FIG. 35 as input, extracts pilot symbols 1801 inserted in channel A and pilot symbols 1801 inserted in channel B in FIG.27, estimates channel distortion, and outputs channel distortion estimation signal 3203.

Similarly, frequency offset estimation section 3204 receives channel B parallel signal 3201 corresponding to separated channel B parallel signal 2902 in FIG. 35 and channel A parallel signal 3208 corresponding to separated channel A parallel signal 2901 in FIG. 35 as input, extracts pilot symbols 1801 inserted in channel A and pilot symbols 1801 inserted in channel B in FIG. 27, estimates frequency offset, and outputs frequency offset estimation signal 3206.

Then, information symbol demodulation section 3206 receives channel B parallel signal 3201, channel distortion estimation signal 3203, and frequency offset estimation signal 3206 as input, eliminates frequency offset, channel distortion, and suchlike distortion, performs demodulation, and outputs channel B received digital signal 3007.

By estimating channel distortion and frequency offset using channel A and channel B pilot symbols in this way, estimation precision is improved, and reception sensitivity characteristics are improved.

The above description refers to the configuration in FIG. 33 in which a channel distortion estimation section and frequency offset estimation section are provided, but the present invention can be similarly implemented with a configuration in which only one or the other is provided.

Please amend the paragraphs beginning on Page 99, line 18 and line 25 respectively, as follows:

A data separation section 4701 separates a received digital signal 3906 into receive data, antenna information, and radio wave propagation environment estimation information, outputs receive data 4702, and outputs an antenna information signal 4703 and radio wave propagation environment estimation <u>information</u> signal 4704 to a frame configuration determination section 4705.

Frame configuration determination section 4705 determines the frame configuration based on antenna information signal 4703 and radio wave propagation environment estimation <u>information</u> signal 4704, and outputs a frame configuration signal 4706.

Please amend the paragraphs beginning on Page 105, line 12 and line 24 respectively, as follows:

FIG. 48 shows a base station receiving apparatus. At this time, it is assumed that, for example, communication is being performed with a terminal capable of demodulating channels A, B, and C as shown in FIG.49. Data separation section 4701 has a received digital signal as input, separates data transmitted from the terminal with the frame configuration in FIG.51, and outputs receive data 4702, antenna information signal 4703, and radio wave propagation environment estimation <u>information</u> signal 4704. Here, antenna information signal 4703 is information indicating that three antennas are provided or that 3-channel multiplex signals can be received.

Frame configuration determination section 4705 has antenna information signal 4703 and radio wave propagation environment estimation <u>information</u> signal 4704 as input, determines frame configurations based on antenna information signal 4703 and radio wave propagation environment estimation <u>information</u> signal 4704, and outputs frame configuration signal 4706. Here, the frame configurations based on antenna information signal 4703 indicating that three antennas are provided or that 3-channel multiplex signals can be received are as shown in FIG.45.

Please amend the paragraphs beginning on Page 106, line 6 and line 22 respectively, as follows:

In FIG. 45, since the terminal that is the communicating party can receive three channels, when radio wave propagation environment estimation <u>information</u> signal 4704 indicates that the

radio wave propagation environment is good, signals of three channels are multiplexed and transmitted, as at times 3, 6, 7, and 10, for example. When the radio wave propagation environment is fair, signals of two channels are multiplexed and transmitted, as at times 4 and 5. When the radio wave propagation environment is poor, a signal of one channel is transmitted, as at times 8 and 9.

In the base station receiving apparatus in FIG.48, data separation section 4701 has a received digital signal as input, separates data transmitted from the terminal with the frame configuration in FIG.51, and outputs receive data 4702, antenna information signal 4703, and radio wave propagation environment estimation <u>information</u> signal 4704. Here, antenna information signal 4703 is information indicating that two antennas are provided or that 2-channel multiplex signals can be received.

Please amend the paragraphs beginning on Page 107, line 3 and line 12 respectively, as follows:

Frame configuration determination section 4705 has antenna information signal 4703 and radio wave propagation environment estimation signal 4704 as input, determines frame configurations based on antenna information signal 4703 and radio wave propagation environment estimation <u>information</u> signal 4704, and outputs frame configuration signal 4706. Here, the frame configurations based on antenna information signal 4703 indicating that two antennas are provided or that 2-channel multiplex signals can be received are as shown in FIG.46.

In FIG.46, since the terminal that is the communicating party can receive two channels, when radio wave propagation environment estimation <u>information</u> signal 4704 indicates that the radio wave propagation environment is good, signals of two channels are multiplexed and transmitted, as at times 3, 4, 5, 7, and 10, for example. When the radio wave propagation environment is poor, a signal of one channel is transmitted, as at times 6, 8, and 9.

Please amend the paragraph beginning on Page 110, line 4 as follows:

The configuration of a base station receiving apparatus is as shown in FIG. 48, in which data separation section 4701 separates received digital signal 3906 into receive data 4702, antenna information signal 4703, and radio wave propagation environment estimation <u>information</u> signal 4704 in accordance with the frame configuration in FIG.51, and outputs receive data 4702, antenna information signal 4703, and radio wave propagation environment estimation <u>information</u> signal 4704. Frame configuration determination section 4705 has

antenna information signal 4703 and radio wave propagation environment estimation information signal 4704 as input, and changes the modulation method in accordance with radio wave propagation environment estimation signal 4704, for example.

Please amend the paragraph beginning on Page 112, line 23 as follows:

FIG. 53 is a block diagram showing an example of base station transmit signal frame configurations according to Embodiment 12 of the present invention. Parts in FIG. 53 identical to those in FIG. 2 or FIG. 45 are assigned the same reference numerals as in FIG.2 or FIG. 45, and detailed descriptions thereof are omitted.

Please amend the paragraph beginning on Page 115, line 17 as follows:

FIG. 55 is a drawing showing an example of the configuration of a terminal transmitting apparatus according to Embodiment [[11]] 12 of the present invention. Parts in FIG. 55 identical to those in FIG. 50 are assigned the same reference numerals as in FIG. 50, and detailed descriptions thereof are omitted.

Please amend the paragraphs beginning on Page 116, line 15 and line 22 respectively, as follows:

FIG. 58 is a drawing showing an example of the configuration of a base station receiving apparatus according to Embodiment [[11]] 12 of the present invention. A used antenna determination section 5701 has radio wave propagation environment estimation signal 4704 as input, and outputs frame configuration signal 4706 and antenna information 5702 used by a terminal for reception.

FIG. 59 is a drawing showing an example of the configuration of a base station transmitting apparatus according to Embodiment [[11]] 12 of the present invention. Parts in FIG. 59 identical to those in FIG. 47 are assigned the same reference numerals as in FIG. 47, and detailed descriptions thereof are omitted.

Please amend the paragraph beginning on Page 120, line 16 and line 22 as follows:

FIG. 58 shows a base station receiving apparatus, in which data separation section 4701 has transmit digital signal 4905 in accordance with the frame configuration in FIG. 56 as input, separates this into data and a radio wave propagation environment estimation signal, and outputs receive data 4702 and radio wave propagation environment estimation information signal 4704.

Used antenna determination section 5701 has radio wave propagation environment

estimation information signal 4704 as input, determines an antenna to be used by the base station for transmitting a modulated signal based on radio wave propagation environment estimation information signal 4704, and outputs this as frame configuration signal 4706. An antenna used by a terminal for reception is determined based on the kind of frame configurations in FIG.53 and radio wave propagation environment estimation information signal 4704, for example, and antenna information 5702 used by a terminal for reception is output.